

Eye On Drought

*Produced by the Monitoring
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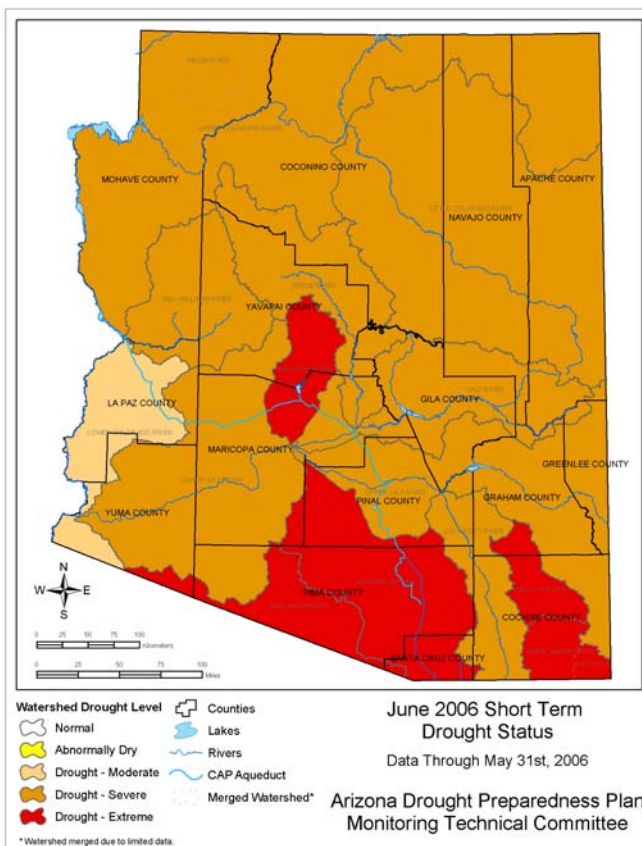


**Arizona Department
of Water Resources**

Arizona Drought Monitor Report June 2006

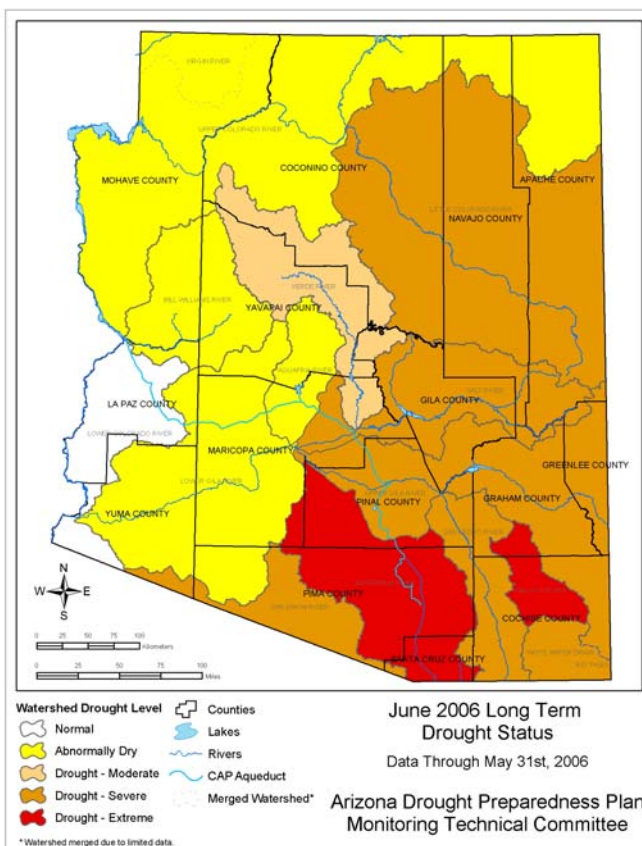
Short-term Drought Status

Short-term drought status has not changed for the month of June. Most of the state remains at severe drought status, with portions of southern and central Arizona at extreme status, and portions of southwestern Arizona at moderate drought status.



Long-term Drought Status

The drought status of the Willcox Playa watershed has moved from severe to extreme. Other watersheds in the state remain unchanged since the May report. The majority of the state is experiencing abnormally dry or severe drought status conditions.



Reservoir Storage



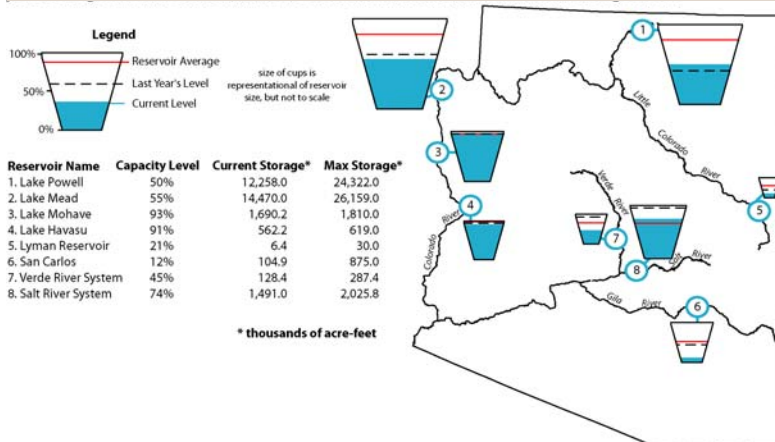
During the month of May...

- Arizona's total in-state reservoir storage declined by about 4 percent of capacity.
- As the result of earlier than average spring snowmelt and runoff from the Upper Colorado River Basin, total storage on the Colorado River rose by 1.3 percent of capacity.
- The Salt River system and San Carlos reservoir on the Gila River both declined by 4 percent.
- Lyman Lake fell by about 6 percent of capacity.
- Storage on the Verde River system remained constant at 45 percent.
- The combined in-state and Colorado River storage rose by 1 percent.

A longer view...

- The Salt River system has declined by 18 percent of capacity since a year ago, but remains at about 11 percent above the long-term average level.
- Storage on the Verde River system is currently at about 64 percent of the long-term average.
- The San Carlos reservoir now holds just over a quarter of the amount of water it did a year ago, having declined by about 35 percent of capacity to its current level of 12 percent of capacity.
- The June final Lake Powell inflow forecast, issued by the National Weather Service on June 5, 2006, is projecting April through July 2006 unregulated inflow to be 5.9 million acre-feet, or 74 percent of average (Tom Ryan, U.S. Bureau of Reclamation). Inflow estimates earlier in the year were projected much higher at 97 percent of average on April 1, when basin snowpack conditions were better.
- Over the past 7-years, inflow to Lake Powell will have been below average in all but one year (2005). While dry conditions eased in 2005, the drought in the Colorado River Basin does not appear to be over and tree-ring analysis indicates that it is common to have 1 or 2 above average years during sustained multi-year droughts.
- Inflow volumes in June and July are expected to be much below average levels.
- Lake Powell elevation is expected to rise until late June or early July.
- Total storage on the Colorado River is at only about two-thirds of average due to long-term drought in the Upper Colorado River Basin.

Arizona reservoir levels for May 2006 as a percent of capacity. The map depicts the average level and last year's storage for each reservoir, while the table also lists current and maximum storage levels.

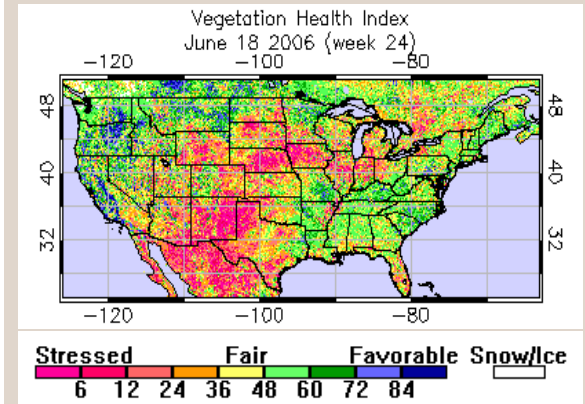


A new tree-ring reconstruction of Colorado River streamflow is now available on the NOAA Paleoclimatology Program website
<http://www.ncdc.noaa.gov/paleo/pubs/woodhouse2006/woodhouse2006.html>

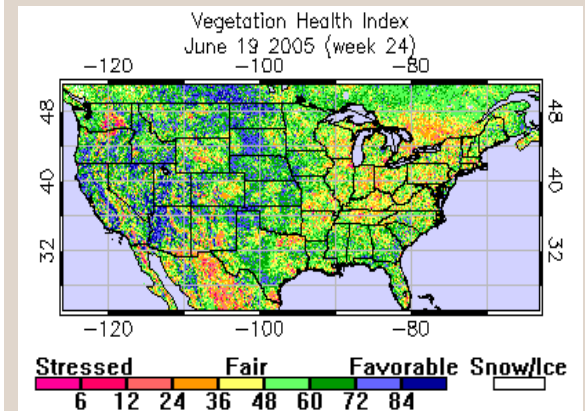
Vegetation Health



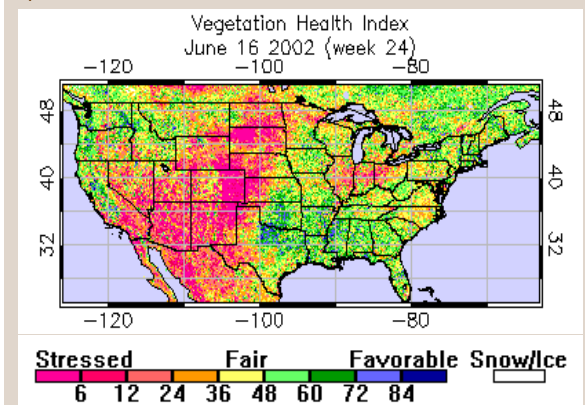
As of June 18, 2006, significant portions of Arizona show extremely stressed vegetation (below).



Arizona has seen significant deterioration of vegetation health since the relatively wet winter and spring of 2004-2005, shown in the June 2005 image below.



Compared to 2002, however, vegetation stress this year is not as widespread. This 2002 image (below) shows the impact of multiple years of stress (1999-2002). Vegetation stress is not as severe this year after the relief that 2005 provided.



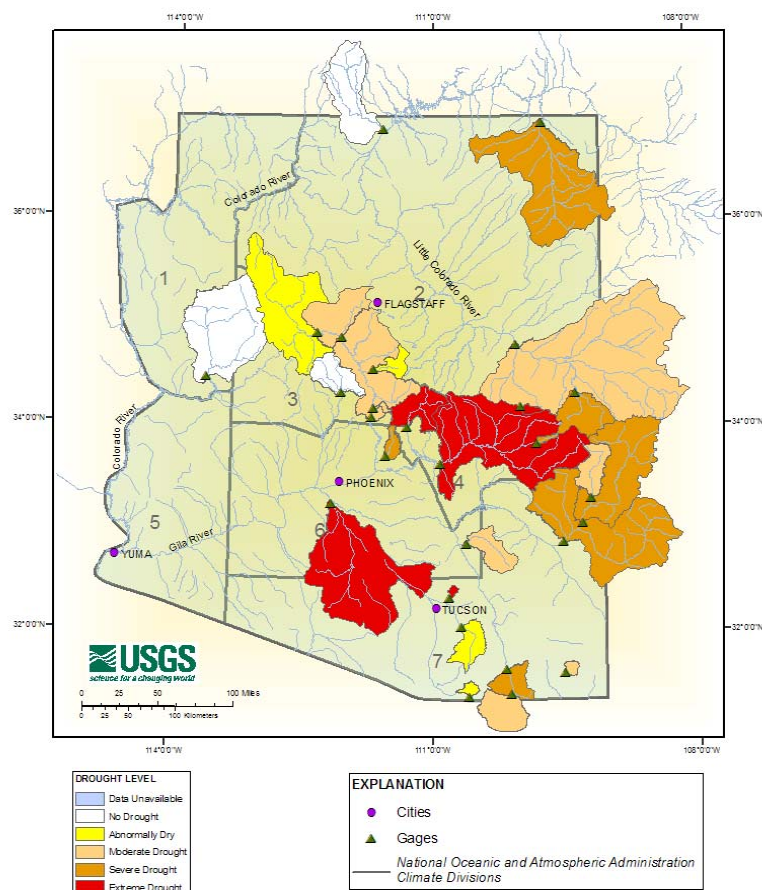
(Images taken by the National Oceanic and Atmospheric Administration's National Environmental Satellite, Data and Information Service (NESDIS))

Mountain Runoff



Drought Levels Based on Monthly Streamflow Discharge

May 2006



May Streamflow

As a whole, spring snowmelts have been unproductive, contributing significantly low runoff into the state's reservoirs. Other impacts associated with these extremely low flows include crop and pasture production losses in areas where farmers depend on direct stream diversions for irrigation.

May Runoff Observed (compiled by NRCS from USGS data)

Water body	May 2006 Streamflow in Acre Feet	% of Median
Salt River near Roosevelt	7,793	16%
Tonto Creek	174	9%
Verde River at Horseshoe Dam	8,039	69%
Combined Inflow to Salt River Project (SRP) reservoir system	16,006	25%
Little Colorado River above Lyman Lake	68	11%
Gila River at HSV, nr. Solomon	3,410	27%
Gila River to San Carlos Reservoir	516	8%
Colorado River inflow to Lake Powell	1,729,800	75% of the 30-yr. avg.

Mountain Runoff Summary

Preliminary figures indicate that runoff into the SRP reservoir system for the period January through May was approximately 121,000 acre-feet, which is the second lowest volume recorded for this period in SRP history. The driest year was 2002 with 105,295 acre-feet. The January-May period is the time of year when the greatest stream flow volumes normally occur in Arizona from spring snowmelt.

Inflow volume to Lake Powell is almost certain to be well below average this year in response to warm and dry springtime conditions in the basin. In that regard, the June 1 outlook issued by the National Weather Service is projecting April through July inflow to Lake Powell at 5.9 million acre-feet, which is 74 percent of average. Inflow estimates earlier in the year were projected much higher at 97 percent of average on April 1, when basin snowpack conditions were better.

January-May Observed Stream Flow (compiled by NRCS from USGS data)

Water body	Observed Runoff, January 1-May 31, in Acre Feet	% of Median
Salt River near Roosevelt	55,310	14%
Tonto Creek	3,660	7%
Verde River at Horseshoe Dam	61,910	28%
San Francisco River at Clifton	14,330	20%
Gila River near Solomon	32,820	20%
San Carlos reservoir inflow	11,456	12%

Temperature and Precipitation



Update

The extremely dry conditions that plagued the state in April worsened in May, with all but one station reporting monthly precipitation totals well below normal. These conditions were most pronounced across east-central Arizona and the southern border.

Precipitation totals

Previous 3- and 6 month periods –

For the 3-month period, conditions improved from “abnormally dry” to “no drought” across the central portions of the state as an exceptionally dry February was replaced by a moderately dry May. For the 6-month period, precipitation conditions remain in the “severe” drought category across most of the state, still reflecting the exceptionally dry winter. Exceptions are the Santa Cruz and San Simon basins in south central Arizona where precipitation totals indicate “extreme” drought, and the Virgin River basin in the northwest which has no drought.

Previous 12 months –

Most of the state is experiencing “severe” drought conditions based on precipitation, while the Lower Gila has “moderate” drought and the southern Lower Colorado is “abnormally dry”. This period reflects below normal precipitation for both last year’s monsoon and this year’s winter.

Previous 2 years –

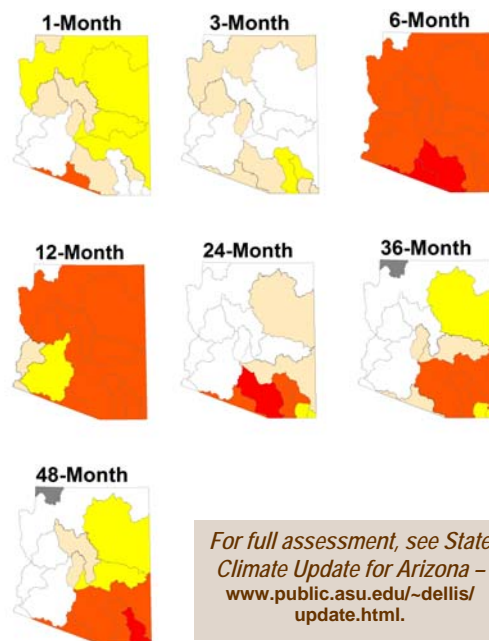
The south-central watersheds remain at a level of “severe” to “extreme” drought, while the Upper Gila and Little Colorado watersheds are experiencing “abnormally dry” conditions. The 24-month and longer periods still reflect the exceptionally wet winter of 2005.

Previous 3 years –

The 36-month precipitation totals are at or above average for the western and northern parts of Arizona. The change from last month is that the Little Colorado watershed dropped from “no drought” to “moderate” drought, in terms of precipitation. White Water Draw in the southeast corner of the state improved slightly from “severe” to “moderate” drought.

Previous 4 years –

The long-term problematic areas within the state remain the east-central and south-east regions, where the 4-year precipitation totals suggest “moderate” drought along the Salt and Little Colorado Rivers, “severe” drought farther south, and “extreme” drought for the Wilcox Playa and White Water Draw.



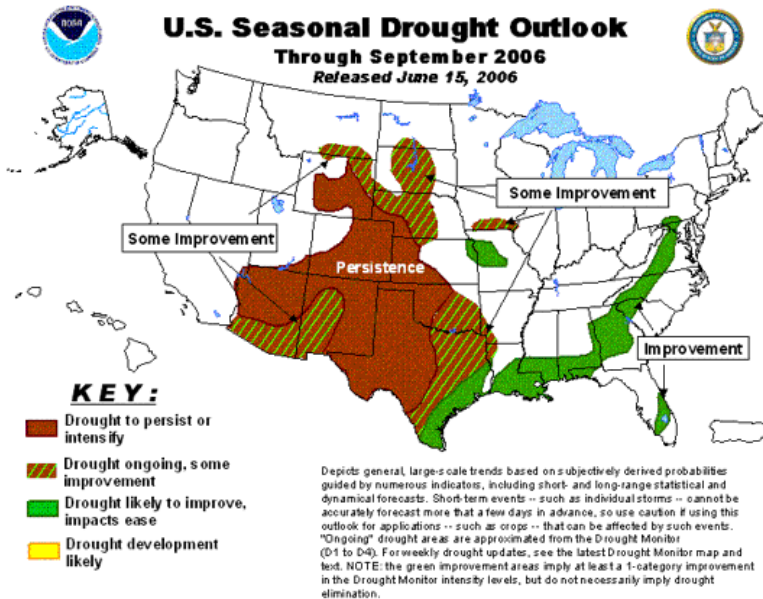
Numerical Category	Description	Precipitation Percentile
0	no drought	40.01 – 100
1	abnormally dry	25.01 – 40.00
2	moderate drought	15.01 – 25.00
3	severe drought	5.01 – 15.00
4	extreme drought	0.00 – 5.00
5	insufficient data	

Mountain Precipitation

Data from high elevation SNOTEL sites show that precipitation for May was 35 percent of average over the Salt River basin, 10 percent of average over the Verde River basin, and 34 percent of average over the San Francisco-Upper Gila River basin. The Little Colorado River basin received 30 percent of average precipitation in May. Water year precipitation continues to show well below average amounts in the basins, ranging from 36 percent to 42 percent of average.

Watershed	Percent (%) of 30-Yr. Average Water Year Precipitation October 1 – May 31
Salt River Basin	41%
Verde River Basin	37%
Little Colorado River Basin	40%
San Francisco-Upper Gila River Basin	42%
Central Mogollon Rim	36%
Upper Colorado River Basin	93%

Weather Outlook



Drought Outlook

The Seasonal Drought Outlook indicates areas experiencing drought conditions in the northern two thirds of Arizona will see these conditions persist through at least September. *Some* improvement in the southern third of the state is possible by September 2006 (NOAA Climate Prediction Center).

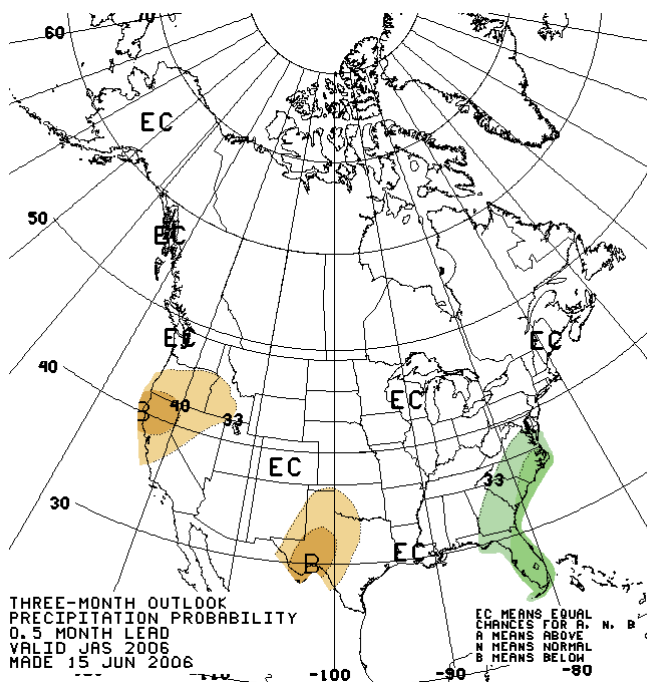
Also see the most current **Southwest Climate Outlook** -

www.ispe.arizona.edu/climas/forecasts/swoutlook.html

For additional weather information from the Office of the **State Climatologist for Arizona** -

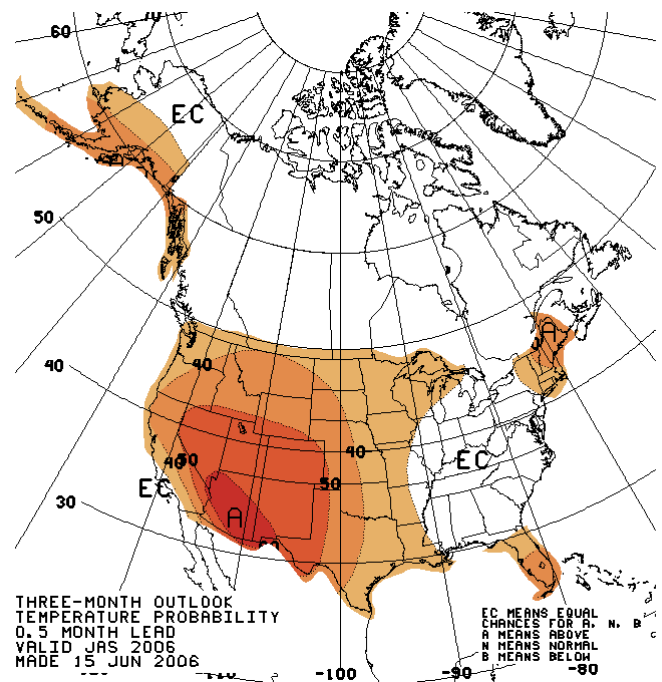
www.public.asu.edu/~dellis/azscweather.html

July to September Weather Outlooks



Precipitation

Equal chances for above average, average, and below average precipitation across the state (NOAA Climate Prediction Center).



Temperature

High confidence level that temperatures will be above average (NOAA Climate Prediction Center).

NOAA's CPC Outlooks are 3-category forecasts. As a starting point, the 1971–2000 climate record is divided into 3 categories, each with a 33.3 percent chance of occurring (i.e., equal chances, EC). The forecast indicates the likelihood of one of the extremes—above-average (A) or below-average (B)—with a corresponding adjustment to the other extreme category; the "average" category is preserved at 33.3 likelihood, unless the forecast is very strong. Thus, using the NOAA-CPC temperature (precipitation) outlooks, areas with light brown (green) shading display a 33.3–39.9 percent chance of above-average, a 33.3 percent chance of average, and a 26.7–33.3 percent chance of below-average temperature (precipitation). A shade darker indicates a higher than 40.0 percent chance of above-average, a 33.3 percent chance of average, and a further reduced chance of below-average temperature, and so on. Equal Chances (EC) indicates areas with an equal likelihood of above-average, average, or below-average conditions; it is used by forecasters when the forecast tools do not indicate a strong "signal" conditions during a given period will be in any one of the three categories.